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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/699,894	10/30/2000	Mukund Padmanabhan	YOR20000388US1	7224
35195	7590	12/12/2005	EXAMINER PIERRE, MYRIAM	
FERENCE & ASSOCIATES 409 BROAD STREET PITTSBURGH, PA 15143			ART UNIT 2654	PAPER NUMBER

DATE MAILED: 12/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/699,894	<b>Applicant(s)</b> PADMANABHAN ET AL.	
	<b>Examiner</b> Myriam Pierre	<b>Art Unit</b> 2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 3/14/2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicant's arguments filed 07/13/2004 regarding Office Action of 03/20/2003, the proposed changes are approved by the examiner, amending the specification on pages 6-7 and 15-16, and removal of the objection to the drawing.

### ***Response to Arguments***

2. Applicant's arguments filed 07/13/2005 have been fully considered but they are not persuasive.

### **Rejection under 35USC 102 (b)**

Applicant argues that Watanabe et al. (5,754,681) (now referred as Watanabe), does not teach “on the feature of minimizing the probability of subsequent misclassification of at least one feature classifier”. Examiner respectfully disagrees. Watanabe does teach “on the feature of minimizing the probability of subsequent misclassification of at least one feature classifier” (Fig. 7 steps 4-5, col. 18 lines 9-24, col. 24 lines 51-60, and lines 15-30). The feature extraction is processed through a discriminate function calculator, then it is processed into a selector to be classified, Fig. 1. During the training process, Fig. 7, there is a calculation for misclassification, so Watanabe has a method for calculating the cost of misclassification and takes into the account the smallest probability of misclassification of the training sample by calculating the loss, when the loss is calculated, then the probability of the misclassification can be measured in favor or disfavor, this is how the minimizing process is taken into account, Watanabe is minimizing the probability of misclassification by taking into account the loss.

Applicant argues that the office has “taken a portion of prior art illustrated in this reference (but not practiced by the reference) and combined it with another portion of the reference (in the absence of any teaching of combining the two) to make this rejection”. Examiner respectfully disagrees. Watanabe clearly teaches the portion illustrated (Fig. 7 steps 4-5, col. 18 lines 9-24, col. 24 lines 51-60, and lines 15-30) and regarding the motivation to combine, see Rejection under 35USC 103 (a).

Rejection under 35USC 103 (a)

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Thus, one of ordinary skill in the art would be motivated to use Chittineni et al. minimizing of divergence in pattern recognition into Watanabe's parameterized signal pattern recognition in order to reduce error probability and the motivation to use Guorong et al. distance feature selection with Watanabe in order to select the most optimum possibility. The mathematics is obviously known in the process of minimizing divergence in pattern recognition, when implementing pattern recognition into signal processing, why not look into probability or statistical calculations to reduce error by either measuring the optimal chances for a match or mismatch? The applicant is stating that there is “no reason to combine”, however, the

motivation is clearly well known in the art, to minimize error in pattern recognition and/or seek the optimal choice in pattern recognition via the well known statistics/mathematical process taught by both Chittineni et al. and Guorong et al.

*Claim Rejections - 35 USC 102*

1. Claims 1, 4-7 and 10-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Watanabe et al. (U.S. Patent 5,754,681 A).

Watanabe et al.

Regarding claims 1, 7 and 13, the Signal Pattern Recognition Apparatus, Parameter Training Controller for Training Feature Conversion Parameters and Discriminate Functions of Watanabe et al reads on the process of providing pattern recognition as follows:

- Watanabe et al (200 in figure 1) reads on the feature of an input interface for inputting a pattern;
- Watanabe et al (1 in figure 2) reads on the feature of transforming the input pattern to provide a set of at least one feature for a classifier;
- Watanabe et al (column 18 lines 9-24, Fig. 7 steps 4-5, col. 23 lines 50-59 and col. 24 lines 15-30) reads on the feature of minimizing the probability of subsequent misclassification of at Least one feature in the classifier
- Watanabe et al (column 18 Lines 59-68) reads on the feature of developing an objective function; and

- Watanabe et al (column 19 Lines 8-9) reads on the feature of optimizing the objective function through gradient descent.

Regarding claims 4 and 10., the claims are set forth with the same limits as claims 1 and 7, respectively. Watanabe et al (column 21 line 8) reads on the feature of *querying whether the optimized objective function converges*.

Regarding claims 5 and 11, the claims are set forth with the same limits as claims 4 and 10, respectively. Watanabe et al (column 24 line 22) reads on the feature of *repeating an optimizing step if the optimized objective function does not converge*.

Regarding claims 6 and 12., the claims are set forth with the same limits as claims 4 and 10, respectively. Watanabe et al (column 1, Lines 10-15) reads on the feature that *pattern recognition is speech recognition*.

### ***Claim Rejections - 35 USC 103***

#### **Watanabe et al & Chittineni et al**

Claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al and further in view of Chittineni et al. ("On the Maximization of Divergence in Pattern Recognition - Correspondence", IEEE Transactions on Information Theory, September 1976).

Regarding claims 2 and 8, the claims are set forth with the same Limits as claims 1 and 7, respectively. Where Watanabe et al does not specifically mention maximizing average pair divergences, Chittineni et al (page 59 Lines 6-7) reads on the feature of maximizing an average piece-wise divergence, which would have made it obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Chittineni et al to the device/method of Watanabe et al so as to reduce error probability.

**Watanabe et al & Guorong et al**

Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al and further in view of Guorong et al (Bhattacharyya Distance Feature Selection", Proceedings of the 13th International Conference on Pattern Recognition, August 1996).

Regarding claims 3 and 9, the claims are set forth with the same Limits as claims 1 and 7, respectively. Where Watanabe et al does not specifically mention the Bhattacharyya method, Guorong et al (last 5 Lines, page 195) reads on the feature of minimizing a union Bhattacharyya bound, which would have made it obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Guorong et al to the device/method of Watanabe et al so as to select the most optimum possibility.

***Conclusion***

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Myriam Pierre whose telephone number is 571-272-7611. The examiner can normally be reached on 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on 571-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MP

12/07/2005

  
**ANGELA ARMSTRONG**  
**PRIMARY EXAMINER**